

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

TITLE: Vehicle Seat Frame

INVENTORS: Dennis Gryp

ASSIGNEE: Sears Manufacturing Company

ATTORNEYS: Thomas G. Scavone
Niro, Scavone, Haller & Niro
181 W. Madison Street
Suite 4600
Chicago, Illinois 60602

ATTORNEY DOCKET NO.: 3570

BACKGROUND OF THE INVENTION

The present invention relates generally to vehicle seating and, more particularly, to an improved vehicle seat frame designed primarily for over the road truck seating.

Vehicle seating, such as that used in cars and trucks, typically includes an internal frame constructed from metal sheet stock or tubing. A foam cushion, with either a separate or integral upholstered cover, is assembled onto or molded over the frame. Most conventional truck seats are made using a metal tube frame, and frame failure is a common problem. In addition to mechanical failure, the fabrication and assembly of the frame, when constructed from either sheet metal or tubing, can be labor intensive and expensive. Another problem associated with these conventional frame designs is that the support for the foam cushion may not be uniform.

These problems can be avoided to some extent by using a one piece frame; one, for example, made by injection molding a plastic frame or die casting a metal frame. Plastic frames, however, are generally too flexible or not sufficiently robust and durable for the rigorous vehicle seat environment. Some off the road vehicle seats have been made using die cast zinc frames,

but these are relatively brittle and require an excessive amount of material to achieve satisfactory load bearing requirements.

SUMMARY OF THE INVENTION

The present invention overcomes the disadvantages of the prior art by providing a one piece, magnesium die cast seat frame. The seat frame of the present invention utilizes a unique die cast design that is strong, durable and yet relatively inexpensive to manufacture. In accordance with the present invention, the seat frame comprises a unitary body having a top, a bottom, two sides, and front and back surfaces. The front surface has an outer perimeter flange positioned adjacent the two sides and the top of the body. An inner perimeter flange is spaced from and generally coextensive with the outer perimeter flange. The front surface also has at least one generally horizontally oriented flange and at least two generally diagonally oriented flanges. This arrangement, together with the use of the die cast magnesium, results in a lightweight yet strong and durable frame that provides generally uniform support to the overlying seat cushion. The frame body is also provided with a large aperture that is positioned to desirably lower the seat assembly center of gravity.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features which are characteristic of the invention are set forth in the appended claims. The invention itself, however, together with further objects and attendant advantages thereof, will be best understood by reference to the following description taken in connection with the accompanying drawings, in which:

FIGURE 1 is a front perspective view illustrating one preferred embodiment of the present invention:

FIGURE 2 is a rear perspective view of the same embodiment shown in FIGURE 1; and

Figures 3, 4 and 5 are top, front and side views of the preferred embodiment shown in FIGURE 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to the drawings, one preferred embodiment of a vehicle seat frame constructed in accordance with the present invention is designated generally by reference numeral 10. Seat frame 10 is comprised of a body 12 having a top 14, a bottom 16, and two sides 18 and 20. The body 12 also has a front surface 22 and a back surface 24.

A perimeter rib 26 extends along the two sides and across the top of the body. Preferably, the rib 26 comprises an outer perimeter flange 28 and an inner perimeter flange 30, the two perimeter flanges protruding from the front surface of the body and separated from one another. A series of bridge flanges 32 extend between the two perimeter flanges, preferably arranged at an angle to the perimeter flanges. At least one and preferably two generally horizontal flanges 34 extend from the front surface of body 12, each positioned in the lower region of the body and preferably in the lumbar area of a seat occupant. A series of diagonally oriented flanges 36 are also provided on the front surface of the body. The horizontal and diagonal flanges generally extend across the entire front surface 22, from the inner perimeter flange on one side of the body to the inner perimeter flange on the other side of the body. As shown in the illustrated embodiment, these flanges are preferably designed to have a greater height at their ends 40, adjacent the inner perimeter flange 30, than along their intermediate length 42.

An aperture 44 is provided in the upper portion of body 12. The aperture 44 is relatively large, having a diameter that is preferably about one half of the side to side dimension of the body 12 in this upper region. The aperture location and size tends to lower the center of gravity of the seat

frame, and ultimately, that of the entire seat assembly. This, in turn, enhances the crash safety performance of the seat.

While the seat frame of the present invention is preferably constructed as a one piece die cast part, the die cast body 12 may be used with other components to enhance its versatility. In the illustrated embodiment, one such enhancement is achieved, using an upper extension 46 to support the upper region of a so called “high back” seat. The extension 46 is fabricated from tubing or bar stock and can have a variety of configurations, depending upon the particular size and shape of the high back cushion to be employed in the seat. The extension is easily assembled to the top of body 12 simply by inserting its vertical sides 48 into suitable mount holes formed in the body.

Various cavities may be provided in the periphery of the body 12 to achieve other functionalities. For example, cavities 50 are positioned at each side 18 and 20 of the body 12 to accommodate hardware for mounting arm rests to the seat. Likewise, recesses 52 may be provided to permit the seat frame to be assembled to other seat components, such as the seat suspension or other frame parts.

The above description is not intended to limit the meaning of the words used in the following claims that define the invention. Rather, it is

contemplated that future modifications in structure, function or result will exist that are not substantial changes and that all such insubstantial changes in what is claimed are intended to be covered by the claims.